Application Serial No.: 10/500,635
Attorney Docket No.: 2156-340A

Examiner: J. Zimmerman
Art Unit: 2854

LISTING OF CLAIMS

1. (Currently amended) A method for the producing a flexographic printing plate, which has a base layer and a solid layer of a light sensitive material attached to the base layer, comprising producing an image in ~~on~~ the layer of the light sensitive material by selective crosslinking, by insolating zones which are to be crosslinked with amplitude modulated laser light having a wavelength of 390 to 410 nm, and sweeping the layer of the light sensitive material with the amplitude modulated laser light to produced crosslinked zones in the layer of light sensitive material without the use of a mask, and, thereafter, removing zones which are not crosslinked to create the image in the solid layer of the light sensitive material, said solid layer of light sensitive material having a thickness between 0.5 to 2 mm and including at least one ~~acylphosphine oxide~~ photoinitiator sensitive to said laser light at said wavelength, wherein the photoinitiator undergoes a photoreaction under effect of said laser light to bleach the layer of light sensitive material, wherein the bleaching renders the crosslinked zones transparent to said laser light in order to enable cross-linking throughout the thickness of the layer of light sensitive material.

2. (Previously presented) The method according to claim 1, including producing the laser light with a laser source consisting of a bundle of diodes producing laser light at wavelengths around 405 nm.

3. (Previously presented) The method according to claim 1, including removing the zones which are not crosslinked by liquefying the zones which are not crosslinked thermally, without using solvents.

4. (Previously presented) The method according to claim 3, wherein the light sensitive material not crosslinked by the laser light has a variation in viscosity in a

temperature range from 60 to 140°C, and the zones that are crosslinked melt at a temperature higher than the temperature range.

5. (Previously presented) The method according to claim 1, wherein the light sensitive material contains at least one selected from the group consisting of high molecular weight polymers, functionalized monomers or oligomers, photo-initiators, reactive or non-reactive diluents, inhibitors and protective agents, and pigments.

6. (Previously presented) The method according to claim 1, wherein the light sensitive material is a photo-polymer containing at least two complementary crosslinking systems.

7. (Currently amended) A method according to claim 6, wherein a main crosslinking system is used to create the ~~an~~ image in the solid layer of the light sensitive material.

8. (Previously presented) The method according to claim 7 [[6]], wherein a complementary crosslinking system is used ~~including using a complementary system~~ to complete the crosslinking and to increase chemical and mechanical resistance.

9. (Previously presented) The method according to claim 6, including using a complementary system to generate different compressibilities.

10. (Previously presented) The method according to claim 6, including partially crosslinking the photo-polymer to adjust viscosity and prevent cold creep during prolonged storage periods or transport.

11. (Currently amended) The method according to claim 6, including the step of pre-

sensitizing ~~sensitizing~~ the photo-polymer with a flash of light before directly writing an image in the layer of the light sensitive material with the laser light.

12. (Previously presented) The method according to claim 1, wherein the light sensitive material is a polymer with a hardness between 60 and 70 ShA.

13. (Previously presented) The method according to claim 1, including insolating the light sensitive material with an energy in a range from 20 to 1000 mJ/cm^2.

14. (Previously presented) The method according to claim 1, including thermally projecting pre-formulated powders onto a support sleeve to produce the plate.

15. (Previously presented) The method according to claim 1, including insolating the light sensitive material with a plurality of lasers operating in parallel.

16. (Currently amended) A flexographic printing plate obtained according to claim 1, comprising tubular sleeve on a rigid support having a composite base and, attached on the base, the solid polymer layer of light sensitive material, wherein the layer of light sensitive material has a thickness between 0.5 to 2 mm and contains at least one photoinitiator sensitive to laser light having a wavelength of 390 to 410 nm, wherein the photoinitiator is capable of undergoing a photoreaction under effect of said laser light to bleach the layer of light sensitive material, wherein the bleached light sensitive material permits a progressively deeper penetration of light into the light-sensitive layer in order to provide uniform cross-linking throughout the thickness of the layer of light sensitive material.

17. (Previously presented) The flexographic printing plate according to claim 16, wherein the composite base has a thickness in a range from 0.2 to 40 mm.

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18. (Canceled)

19. (Previously presented) The flexographic printing plate according to claim 16, wherein the sleeve includes a compressible layer.

20. (Previously presented) The flexographic printing plate according to claim 16, including a second sleeve containing an inserted layer for variation of thickness of the sleeve.

21. (Previously presented) The flexographic printing plate according to claim 20, wherein the inserted layer is compressible.

22. (Previously presented) The flexographic printing plate according to claim 16, wherein the tubular sleeve is extruded.

23. (Previously presented) The flexographic printing plate according to claim 16, wherein the tubular sleeve is produced by rolling and attachment of a plate to a support cylinder or sleeve.

24. (Previously presented) The flexographic printing plate according to claim 16, wherein the tubular sleeve is produced by thermally projecting pre-formulated powders onto a support cylinder or sleeve.

25. (Previously presented) The flexographic printing plate according to claim 16, wherein the rigid support includes a base made of polyester film.

26. (Previously presented) The flexographic printing plate according to claim 16, including a plurality of the layers of light sensitive material.

27. (Previously presented) The flexographic printing plate according to claim 16, wherein the flexographic printing plate is etchable with one of water, an aqueous solution under pressure, high temperature, and brushing.

28. (Currently amended) A method for producing a flexographic printing plate, which has a base layer and a solid layer of a light sensitive material attached to the base layer, comprising producing an image in ~~on~~ the layer of the light sensitive material by selective crosslinking, by insolating zones which are to be crosslinked with amplitude modulated laser light having a wavelength of 390 to 410 nm, and sweeping the layer of the light sensitive material with the laser light to produce crosslinked zones in the layer of light sensitive material without the use of a mask, and, thereafter, removing zones which are not crosslinked to create the image in the solid layer of the light sensitive material, said solid layer of light sensitive material having a thickness between 0.5 to 2 mm and including at least one material selected from the group consisting of high molecular weight polymers, functionalized monomers or oligomers and at least one ~~acylphosphine oxide~~ photoinitiator, wherein the phtoinitiator is sensitive to said laser light at said wavelength and is capable of producing a bleaching effect during a photoreaction in response to said laser light, wherein the bleaching ensures transparency of the crosslinked zones to the laser light in order to enable cross-linking throughout the thickness of the layer of light sensitive material.

29. (Previously presented) A flexographic printing plate obtained according to claim 28, comprising a tubular sleeve on a rigid support having a composite base and, attached on the base, the layer of solid polymer light sensitive material, where the layer of light sensitive material has a thickness between 0.5 to 2 mm and contains at least one photoinitiator sensitive to laser light having a wavelength of 390 to 410 nm, wherein the

photoinitiator is capable of undergoing a photoreaction under effect of said laser light to bleach the layer of light sensitive material, wherein the bleached light sensitive material permits a progressively deeper penetration of the light into the light sensitive layer in order to provide uniform cross-linking throughout the thickness of the layer of light sensitive material.